SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107
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Department of Information Technology

Course Name – 19IT503 Internet of Things & AI

III Year / V Semester

Unit 1 – IoT INTRODUCTION AND APPLICATIONS

Topic 1- Overview and Motivations - IPv6 Role

Overview and Motivation

- ARPANET
- Connected Institutions.

- Internet has connected servers of all kinds to users of all kinds seeking access to information and applications of all kinds
- The next evolution is to connect all “things” and objects that have (or will soon have) embedded wireless (or wireline) connectivity to control systems that support data collection, data analysis, decisionmaking, and (remote) actuation.
- “Things” include, but are not limited to, machinery, home appliances, vehicles, individual persons, pets, cattle, animals, habitats, habitat occupants, as well as enterprises.

Overview and Motivation

It is perceived by proponents as the “next-generation network (NGN) of the Internet

The IoT has two attributes:
(i) being an Internet application and
(ii) dealing with the thing’s information.

The term Internet of Things was coined and first used by Kevin Ashton over a decade ago.

Overview and Motivation

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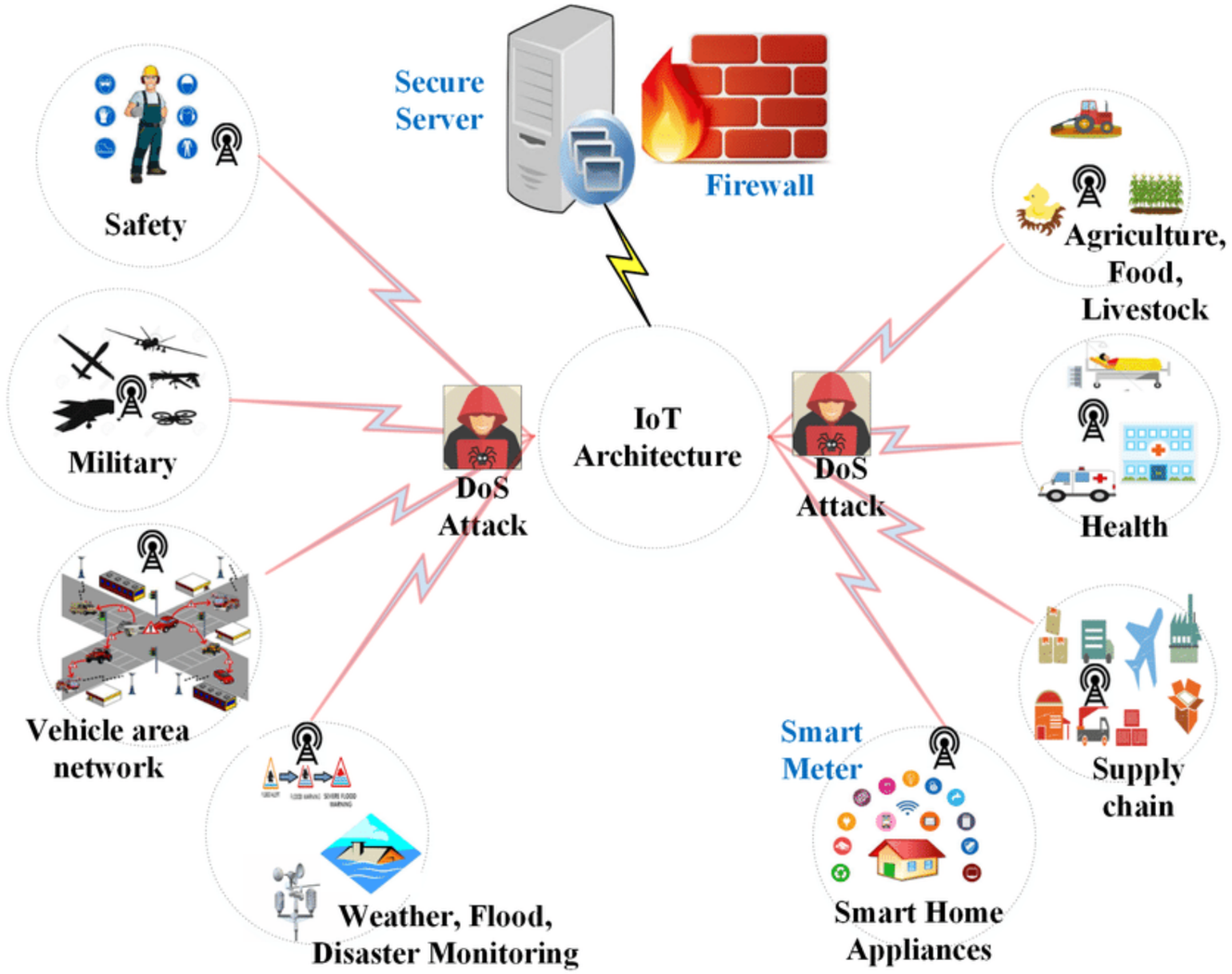
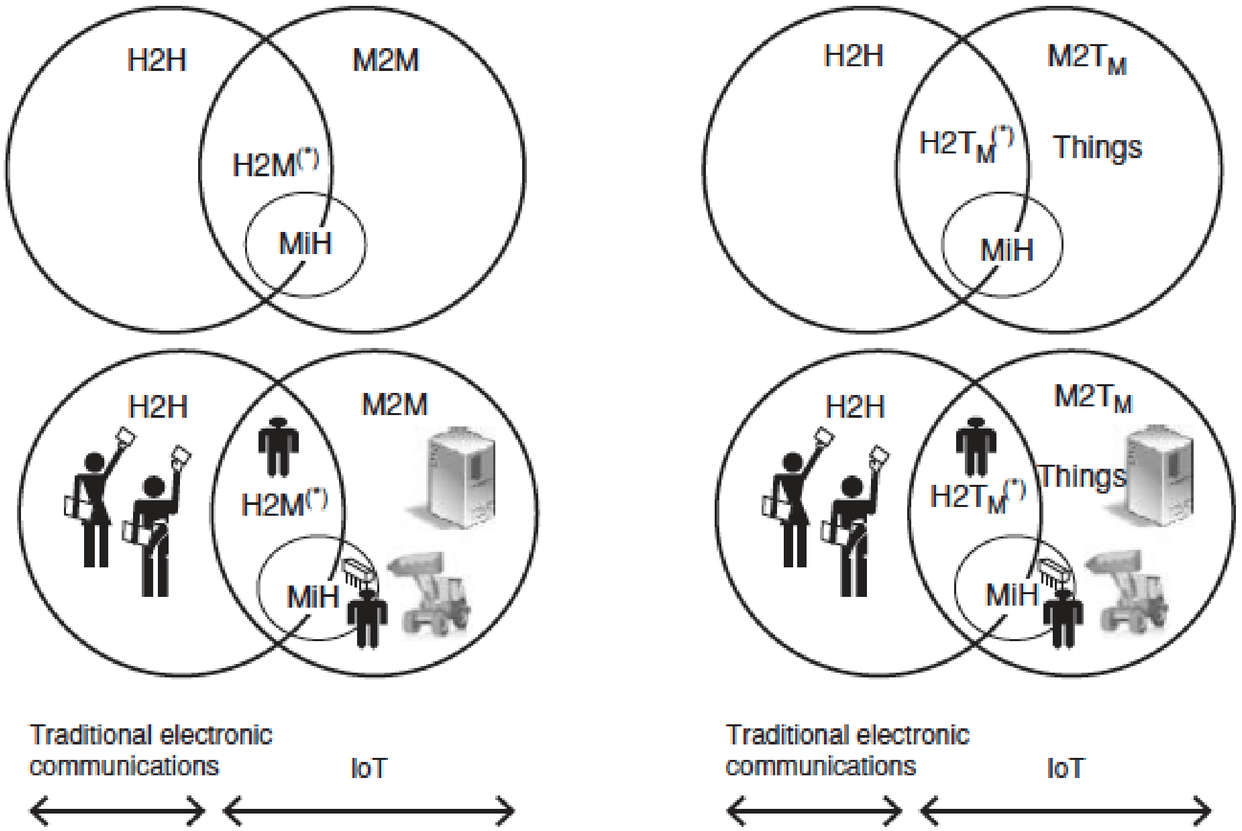


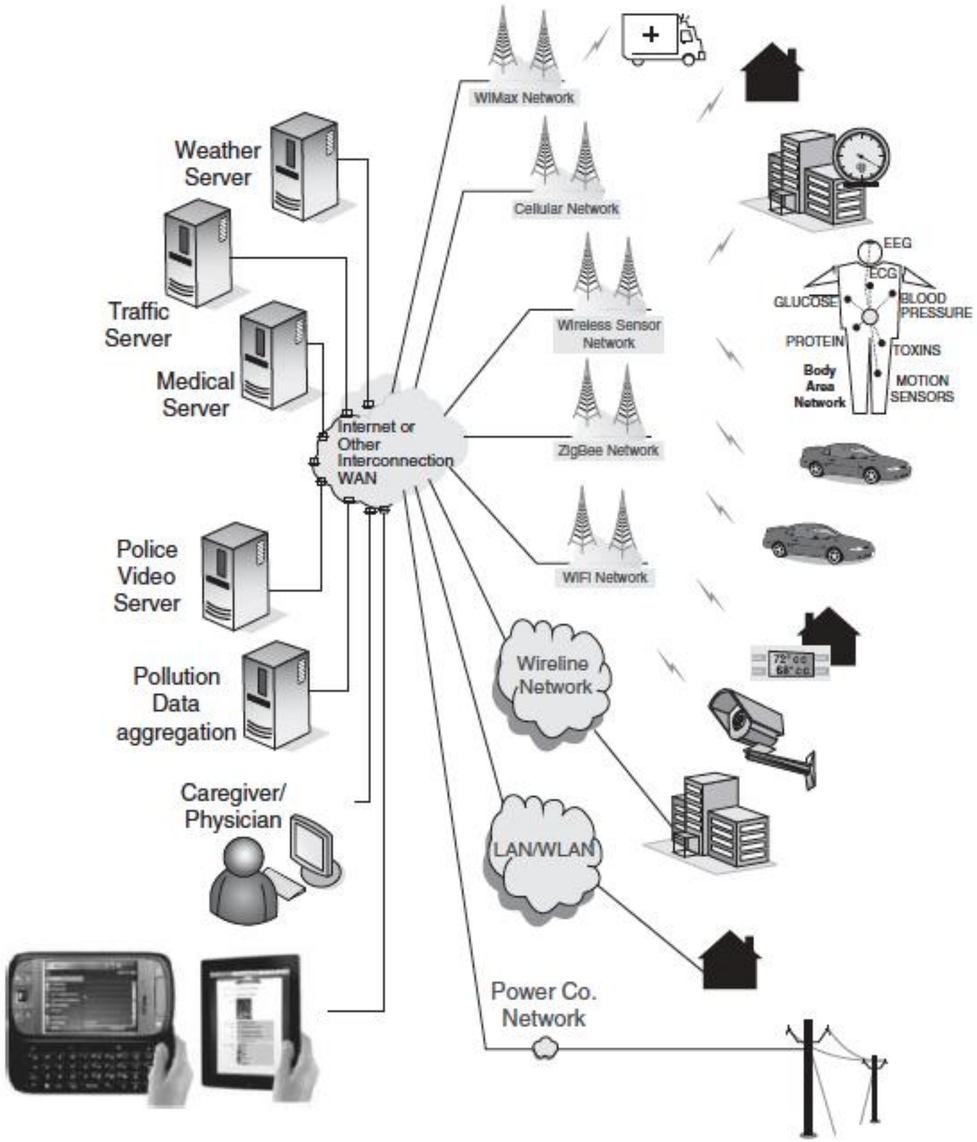
Overview and Motivation



H2H: Human to Human
H2M: Human to Machine – $H2T_M$: Human to Thing with Microprocessor/Machine
M2M: Machine to Machine – $M2T_M$: Machine to Thing with Microprocessor/Machine
MiH: Machine in Humans
(e.g., medical sensors)
(also includes chips in animals/pets)

(*) People have been communicating with computers for over half-a-century, but in this context "machine" means a microprocessor embedded in some objects (other than a traditional computer)

Overview and Motivation



Overview and Motivation

Role of IPv6

- IPv6 with its abundant address spaces,
- globally unique object (thing) identification

- permanent unique identifier, an object ID (OID)
- unique network address (Nadr)

- IPv4 supports 2^32 10^10 NAdr location can be identified uniquely

- IPv6 offers a much larger 2^128 space
- the number of available unique node addressees is 2^128~ 10^39

Overview and Motivation

Advances of IPv6

- Scalability and expanded addressing capabilities
- IPv6 has 128-bit addresses versus 32-bit IPv4 addresses

- “Plug-and-play”: IPv6 includes a “plug-and-play” mechanism that facilitates the connection of equipment to the network.

- Security: IPv6 includes and requires security in its specifications such as payload encryption and authentication of the source of the communication.

- Mobility: IPv6 includes an efficient and robust mobility mechanism namely an enhanced support for mobile IP, specifically, the set of mobile IPv6

THANK YOU